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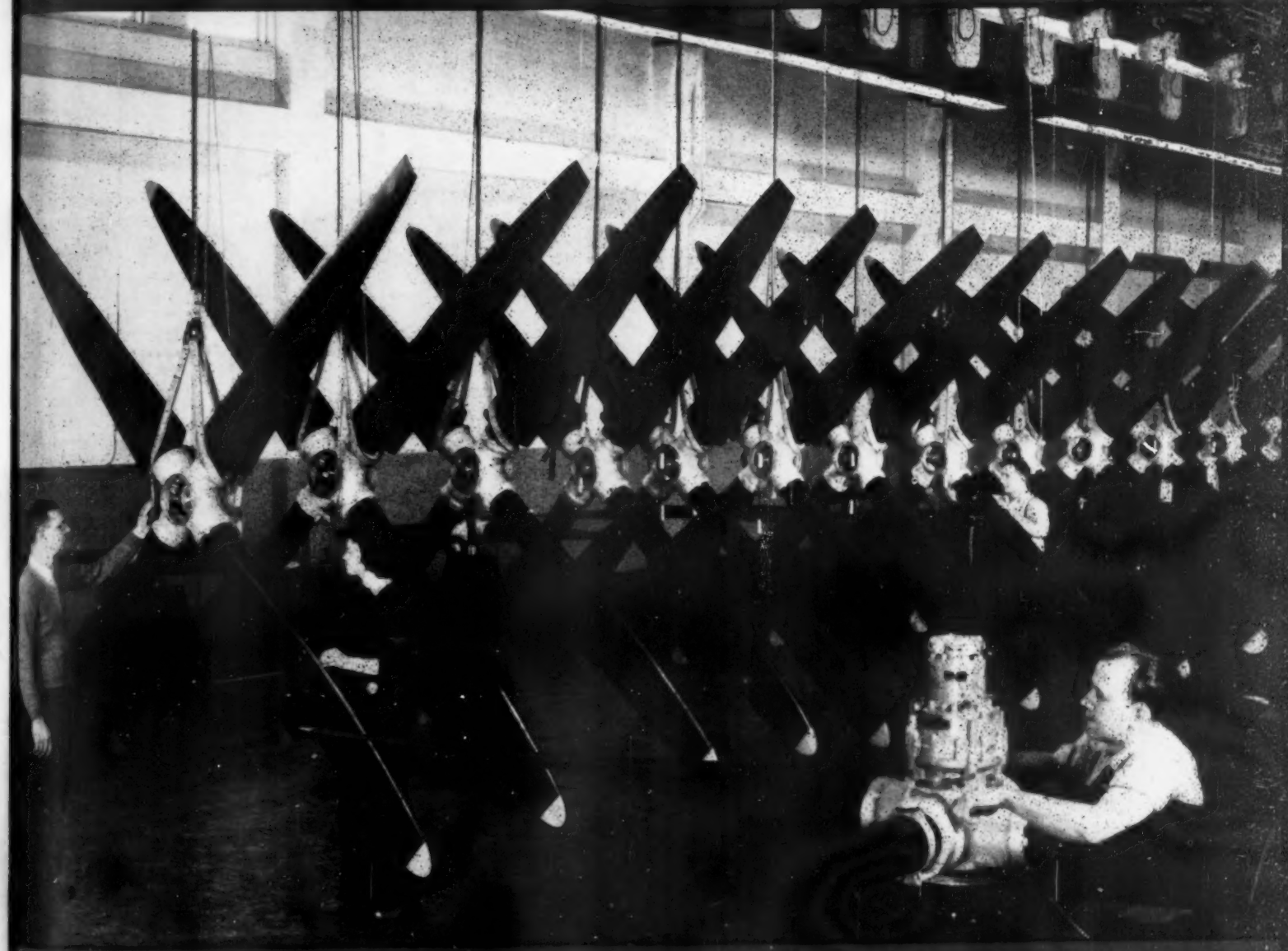
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MAY 8, 1943



Blades for War

See Page 296

A SCIENCE SERVICE PUBLICATION

Do You Know?

Wallpaper may now be purchased with an adhesive base; the inexperienced housewife dunks it in water and hangs it on the wall.

With Allied occupation of North Africa Germany lost its supply of *phosphates;* without this soil fertilizer its food supply will be reduced.

Research at the University of California indicates that radio-phosphorus may offer a promising weapon against *leukemia,* a blood disease usually fatal.

Only 15 woodland *caribou* are known to exist in the United States, and all of these are in Minnesota, according to a recent report of the United States Fish and Wildlife Service.

Of the world *petroleum* production in 1942, the United States produced 66%, Russia nearly 10%, Venezuela 6.6%; the United Nations together produced 94%, the Axis Powers only 6%.

Warplanes returned to America for overhauling, are disassembled, fitted with new parts as necessary, thoroughly tested and sent back to service mechanically in factory-new condition.

The shortage of certain grades of *wood pulp* necessitates the more general use of groundwood, newsgrade unbleached sulphite, de-inked waste fiber and other waste paper in paper and paperboard manufacturing.

Rattan, formerly used in furniture, is now used for parachute rings and war production needs every inch of it available.

Nearly 22,000,000 acres of land are now included in national *parks* and national monuments under the supervision of the National Park Service.

Golf courses in Scotland are now producing food and flax; 18 hole courses were asked to plow up nine holes; those with nine to plow up three.

Argentina exported in 1942 over 121,000 tons of *vegetable oils* extracted from the following, named in order of the amount produced: sunflower seed, linseed, rapeseed, peanuts, cottonseed, corn and castor beans.

In two years since the first 1,000,000-volt industrial *X-ray* equipment was built and installed, over 30 additional machines of the same type and capacity have been put into service testing materials for war equipment.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

SCIENCE NEWS LETTER

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MEDICINE

New Vitamin Discovered

Anti-anemia member of B family may have value in disease treatment. Experiments with chicks show promise. Existence of substance has long been suspected.

➤ DISCOVERY of an anti-anemia vitamin which promises to be of major use in disease treatment is announced to the scientific world (*Science,* April 30).

This new substance of the vitamin B family, obtained through cooperative research by groups at Parke, Davis and Company and the University of Missouri, may very well be one reason spinach is good for building good red blood and liver or liver extract cures pernicious anemia.

Its existence has been suspected since 1940. What the scientists call vitamin B sub c, or the "anti-anemia factor for chicks," has now been isolated as thin, yellow, spearhead-shaped crystal platelets, chemically composed of carbon, hydrogen and nitrogen.

Careful as always, the scientific report does not claim application to human nutrition, but there is a good chance that what works in chicks will work in man.

Dr. J. J. Pfiffner led the Parke, Davis group of scientists, and Prof. A. G. Hogan and Dr. B. L. O'Dell were the team from the University of Missouri where this vitamin has been under investigation for several years. Signing the scientific paper with Dr. Pfiffner from the Detroit laboratory were: S. B. Binkley, E. S. Bloom, R. A. Brown, O. D. Bird and A. D. Emmett.

The scientists state that they believe their vitamin is the same as the folic acid factor believed to be a vitamin and found by other scientists in spinach and other green leaves. (*See SNL,* April 10) They also think it is the same as an "eluate factor" obtained from liver by still another group of researchers.

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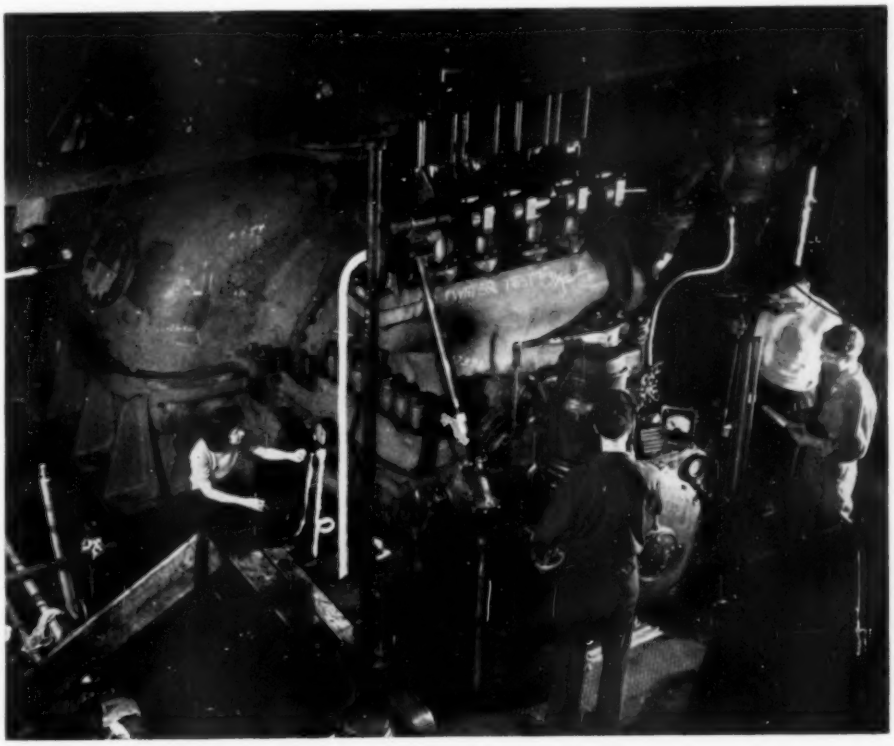

FLOATING POWER—This 30,000-kilowatt turbine generator is one of four floating power plants that General Electric is building for the War Production Board. Towed to manufacturing areas on inland waterways, the mobile generators will provide an emergency power supply.

PLANT PATHOLOGY

New Soil Disinfectant Combats Harmful Organisms

➤ A NEW low-cost disinfectant protects crops from injury by organisms in the soil. The chemical, called D-D mixture for short, gave a real measure of control in tests on rapidly maturing vegetable crops planted in soil heavily infested with root-knot threadworms.

Other experiments in pineapple fields, conducted during the past three years, showed a favorable response in growth, Walter Carter of the Pineapple Research Institute reports (*Science,* April 23). Results were particularly striking in an area where beetle larvae, threadworms and a fungi had ganged up to produce serious plant failure. But the favorable results in the pineapple tests did not show up for over a year after soil treatment.

Cost of the chemical is low compared with any competing disinfectant. It is especially useful where prediction of damage cannot be made prior to planting or in areas where damage is spotty. About 200 pounds of the disinfectant were applied per acre, injected into the soil at one-foot intervals. Gas masks are not needed when the applications are made in the open air.

Much experimental work remains to be done on such problems as dosage under various soil and weather conditions and on the effect of treatment on specific organisms.

This product, which promises to bolster our food production, is technically a mixture of 1:3 dichloropropylene and 1:2 dichloropropane.

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GENERAL SCIENCE

Henry Wallace Elected to Philosophical Society

➤ VICE PRESIDENT Henry A. Wallace is among the 32 new members elected by the American Philosophical Society, oldest of scientific bodies in this country. This election is in keeping with the traditions of the Society, for it was founded by an earlier American who combined statesmanship, science and letters in one career: Benjamin Franklin. And at its recent meeting it celebrated the bicentennary of another American who had a similar career, and who was

also at one time Vice President of the United States: Thomas Jefferson.

The 32 new members include 27 American and five foreign scientists. Elections to the Philosophical Society are made according to four classes, as follows:

Class 1, Mathematical and Physical Sciences: Prof. Raymond T. Birge, University of California; Dean Samuel C. Lind, Institute of Technology, University of Minnesota; Prof. Donald H. Menzel, Harvard University; Prof. Marshall H. Stone, Harvard University; Dr. M. A. Tuve, Department of Terrestrial Magnetism, Carnegie Institution of Washington; Dean Frank C. Whitmore, Pennsylvania State College; Sir William Laurence Bragg, Cambridge University, England; Prof. L. E. J. Brouwn, University of Amsterdam, The Netherlands; Prof. Godofredo Garcia Diaz, University of San Marcos, Peru.

Class 2, Geological and Biological Sciences: Prof. R. T. Chamberlin, University of Chicago; Prof. Ralph W. Chaney, University of California; Prof. H. T. Clarke, Columbia University; Prof. L. C. Dunn, Columbia University; Prof. E. W. Goodpasture, Vanderbilt University; Dr. Warren H. Lewis, Wistar Instiute of Anatomy and Biology; Dr. George L. Streeter, Carnegie Institution of Washington.

Social Sciences and Humanities

Class 3, Social Sciences: Prof. J. P. Boyd, Princeton University; Douglas S. Freeman, editor, Richmond, Va., News Leader; Dr. Owen Lattimore, Johns Hopkins University; Henry Allen Moe, secretary general of the Guggenheim Memorial Fund; Dr. Walter W. Stewart, Institute for Advanced Study, Princeton, N. J.; Prof. Quincy Wright, University of Chicago.

Class 4, The Humanities; Prof. W. E. Hocking, Harvard University; Fiske Kimball, director, Philadelphia Museum of Art; Prof. Charles G. Osgood, Princeton University; Prof. Erwin Panofsky, Institute for Advanced Study, Princeton, N. J.; Prof. Mary H. Swindler, Bryn Mawr College; Dr. George C. Vaillant, director, University Museum, University of Pennsylvania; Prof. John D. Beasley, Oxford University; Dr. Allan H. Gardiner, editor, Journal of Egyptian Archaeology; C. E. Barnard, president, New Jersey Bell Telephone Company; Henry A. Wallace, Vice President of the United States of America.

Science News Letter, May 8, 1943

MEDICINE

Chemical Tests Gangrene

Simple, quick test aids difficult diagnosis of gangrene by detecting germ enzymes. Promises to save many war wounded. Practical field trials planned.

➤ LIVES threatened by gas gangrene infection in war wounds may be saved if a new chemical test proves as successful in the hands of military surgeons as it has in laboratory experiments.

The test depends on detecting in fluid exuded from the wound the presence of enzymes or ferments produced by the germs that cause gas gangrene.

The test was developed by Dr. D. McLean and Dr. H. J. Rogers, of England's Lister Institute of Preventive Medicine, and Dr. B. W. Williams, of St. Thomas's Hospital, London (*Lancet*, March 20).

Gas gangrene develops so quickly that death may follow within a few hours and even experienced surgeons, the editor of the medical journal points out, may have difficulty in making the diagnosis in time for effective treatment. Nor is the bacteriologist able to give him much help.

The new chemical test gives results within an hour and is simple to perform. By using an ordinary white blood cell-counting pipette with a few simple precautions it can, the scientists state, be carried out under field conditions.

So far it has only been used in laboratory experiments so that its real practical value is not yet known. The scientists who developed it have published their results quickly so that it can be given an early trial in actual practice.

Of the enzymes produced by the gas gangrene germs, one, called hyaluronidase, is also produced by certain other germs. The scientists apparently believe, however, that it would be more practical to test for this enzyme as a diagnostic measure than for lecithinase, presence of which would give a more specific diagnosis but which is likely to be present in only very small amounts at a time when detection of it would help the diagnosis.

Science News Letter, May 8, 1943

RESOURCES

New Tannin Source Found

➤ THE semi-tropical buttonwood tree found in southern Florida, and more plentifully in Middle America, promises an abundant source of tannin for heavy leather tanning to replace the vanishing supply of chestnut tree tannin.

Both the bark and the wood of this buttonwood tree, which grows to a diameter of 12 inches, are rich in tannin. In the bark the content is 20 per cent, in the wood 8 per cent. Both leach easily. Both give firm, tough, strong, well-filled leather.

The bark leather is slightly darker than the wood leather. Except for this the results with the two extracts are identical.

A nation-wide search has been under way for new sources of tannin since a few years ago, when hope was lost for a further supply of chestnut tannin. Chestnut trees died from a disastrous blight two decades ago, and new plantings are quickly killed by the same blight. The dead wood was used for tannin as long as the supply lasted. Other plants have been found that yield tannin but none of them give the promise now given by the buttonwood.

Dr. Alfred Russell, professor of chemistry at North Carolina State University, has done much work on tannin extraction and in the search for tannin. He reports the results of tests in his laboratory with tannin extracted from the buttonwood.

Split calfskins were tanned with buttonwood tannin, chestnut tannin, and quebracho.

He states, "The buttonwood leather is heavier, better filled, mellower and lighter in color than the chestnut leather; it is heavier, tougher, stronger, equally well filled, but not so soft as the quebracho leather."

The buttonwood which Dr. Russell states yields tannin is called Conocarpus erecta by botanists.

Science News Letter, May 8, 1943

GENERAL SCIENCE

NAS Elects New Members

Eminent Mexican scientist and five British citizens honored by election to Foreign Associateship. Americans honored from all the sciences.

➤ ONE OF Mexico's most eminent scientists, Dr. Alfonso Caso, of the Instituto Nacional de Antropologia e Historia, Mexico City, was elected a Foreign Associate of the National Academy of Sciences at that body's recent spring business meeting in Washington, D. C. This is the highest honor which this "Senate of the Sciences" can bestow upon a person who is not a U. S. citizen.

Dr. Caso, who is at present at the University of Chicago as Visiting Professor from the University of Mexico, received widespread notice several years ago when he discovered the famous tomb treasure of Monte Alban, a find which has been likened for both richness and scientific importance with the tomb of Tut-Ankh-Amen in Egypt. He has long made a special study of the culture of the ancient Zapotec people in Mexico.

Five other scientists, all citizens of the British Commonwealth of Nations, were elected to Foreign Associateship in the Academy along with Dr. Caso. There is one Afrikander, Prof. Hendrik Johannes Van Der Bijl of the University of Pretoria, engineer; one Scot, Sir D'Arcy Wentworth Thompson of the University of St. Andrews, physicist; and three Englishmen, Dr. Harold Spencer Jones of the Royal Observatory, astronomer; Prof. Charles Richard Vynne Southwell of Brasenose College, Oxford University, engineer; and Prof. Charles Edward Spearman of the University of London, psychologist.

Twenty-six members, representing the whole sweep of American science, were elected into the Academy: Dr. L. H. Adams, Geophysical Laboratory, Carnegie Institution of Washington, geophysics; Dr. A. Adrian Albert, University of Chicago, mathematics; Dr. J. W. Beams, University of Virginia, physics; Dr. A. F. Buddington, Princeton University, geology; Dr. Leonard Carmichael, Tufts College, psychology; Dr. W. H. Chandler, University of California at Los Angeles, botany; Dr. E. J. Cohn, Harvard Medical School, biochemistry; Dr. J. N. Couch, University of North Carolina, botany; Dr. Theodosius Dobzhansky, Columbia University, zoology; Dr. Lee A. DuBridge, University of Rochester, physics; Dr. L. C. Dunn, Columbia University, zoology; Dr. Wallace Fenn, University of Rochester, physiology; Dr. Paul D. Foote, Gulf Research and Development Company, physics; Dr. L. P. Hammett, Columbia University, chemistry; Dr. William Houston, California Institute of Technology, physics; Dr. Walter P. Kelley, California Citrus Experiment Station, chemistry; Dr. Warfield T. Longcope, Johns Hopkins University, medicine; Dr. E. K. Marshall, Jr., Johns Hopkins Medical School, physiology; Dr. Leonor Michaelis, Rockefeller Institute for Medical Research, physical chemistry; Dr. C. G. Rossby, University of Chicago, meteorology; Dr. Calvin P. Stone, Stanford University, psychology; Dr. C. V. Taylor, Stanford University, biology; Dr. H. B. Vickery, Connecticut Agricultural Experiment Station, biochemistry; Dr. V. K. Zworykin, RCA Manufacturing Company, physics; Dr. O. H. Robertson, University of Chicago, medicine; Dr. W. Albert Noyes, Jr., University of Rochester, chemistry.

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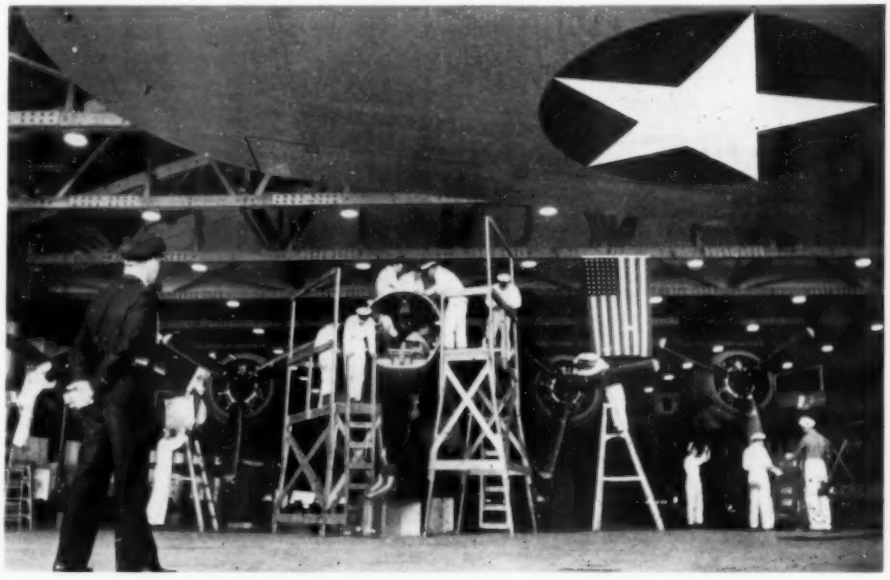


FITTING FOR COMBAT—Four-engined bombers are given last-minute changes not possible on the assembly lines at this modification center of the United Air Lines at Cheyenne, Wyoming. United is one of a number of airlines and aircraft factories operating such modification centers for putting last-minute alterations on standard mass-produced planes.

PSYCHOLOGY

Can You Remember How Telephone Dial Looks?

➤ DON'T look now, but can you remember what your telephone dial looks like? Draw from memory the telephone dial. If it is accurate, you are one person in ten.

Busy New Yorkers dialing 20 times a day flunked this psychological test in this ratio, Dr. Martin Scheerer, of City College, New York, told the Eastern Psychological Association meeting in New York.

(Don't read farther until you have finished your dial drawing.)

Nearly half the college students tested by Dr. Scheerer included in their reproductions of the dial the letter Q which is actually not on the dial. More than half were wrong in giving the color of the numbers (red is the color). Only 20% were mistaken about the color of the letters (they are black). Seven out of ten knew a most frequently dialed telephone number, but only about five out of a hundred could make use of that knowledge in placing specific numbers or letters correctly.

Recalling a familiar object like the telephone dial is not based on specific itemized retention, Dr. Scheerer concluded, but rather on general factors of reconstruction and organization.

Science News Letter, May 8, 1943

MEDICINE

Guarding Army Health

Minds and bodies of soldiers rebuilt at Army Medical Center. New plastic surgery techniques aid wounded men. Army's mobile X-ray units are best in world.

By JANE STAFFORD

► TESTING canned ham-and-eggs and other foods for soldiers overseas; making vaccines to protect men and animals against disease and death; teaching Army doctors to recognize and treat unfamiliar ailments that menace life and health in the tropics; making false teeth and artificial limbs; rebuilding and retraining war-shattered minds and bodies; constantly searching for newer, better ways to protect the health of the American soldier—these are among the many activities of the great body of experts which even includes a make-up artist from Hollywood, who are assembled at the Army Medical Center in Washington, D. C.

Most spectacular, perhaps, of the many phases of the work is the transformation wrought by skilled surgeons on hideously deforming burn injuries and bullet-shattered jaws and faces. As a result of a new method of skin grafting developed since the last war, general improvements in technic and the continuous wire loop with elastic traction for pulling blasted jaws back into normal position, far fewer veterans of this war will carry the disfiguring scars and crippling deformities that horrified civilians after the last war.

One of the patients I saw at a press conference at Walter Reed General Hospital, which is part of the Army Medical Center for treatment, research and training, was an officer in the Air Forces. He had been badly burned in a crash.

New Nose

Using the new technics, the Army surgeons had built up a new nose for him, grafted new skin onto his eyelids, cut away a three-inch wide, tightly drawn scar that ran along his neck and the side of his face and replaced it with smooth skin from his abdomen.

New skin had also been grafted to replace the scarred skin on his hands. In a few months, when the redness has disappeared, he will have little to show that he had ever been badly burned and scarred.

Another patient about to have the same sort of treatment has an ugly scar that draws his chin right down into his neck. That will be cut out and replaced with normal, healthy skin molded into a new chin.

With the new method of grafting, the grafts take and the place from which the skin is removed also heals within about 14 days. With the pedicle graft method formerly used, the process required three or four months.

Skin Cut Thin

The new method was developed by Dr. Earl Padgett, of Kansas City, who invented an instrument called the Padgett dermatone for cutting three-fourths thickness skin for grafts. With this thickness, the grafts take much better and, with the dermatone, they can be cut any desired size and of the same thickness throughout, a feat practically impossible to do with a razor on the heaving abdomen of an anesthetized patient.

Plastic surgery is not just a matter of cosmetics, and Army surgeons prefer to call it reconstructive surgery. They point out that its field may extend from head to foot. It is not always possible to erase all marks of battle wounds nor to give a movie hero's appearance to a badly wounded soldier who was no Apollo before his injury. Much can be accomplished, however, although in some cases several operations and many months may be required before the job is finished.

Plastic surgery of the face almost always involves surgery on the jaws, since in a serious wound of the face the jaws are also usually shattered or partly blown off.

For reconstruction of the jaws, the important thing is to bring them back into what dentists call occlusion, meaning that they are in good position for biting and chewing. To do this, the first step is application of continuous wire loops with elastic traction.

The wire is run around all the remaining teeth, looped between each two teeth at the gum edge. Then elastic is drawn through the loops to pull the jaws into position. The advantage of the elastic over wire traction is that the patient can pull his mouth open if necessary.

Formerly he was supplied with scissors to cut the wire in emergencies, but the scissors often got lost and the patient was in danger of becoming seriously ill, perhaps of choking to death.

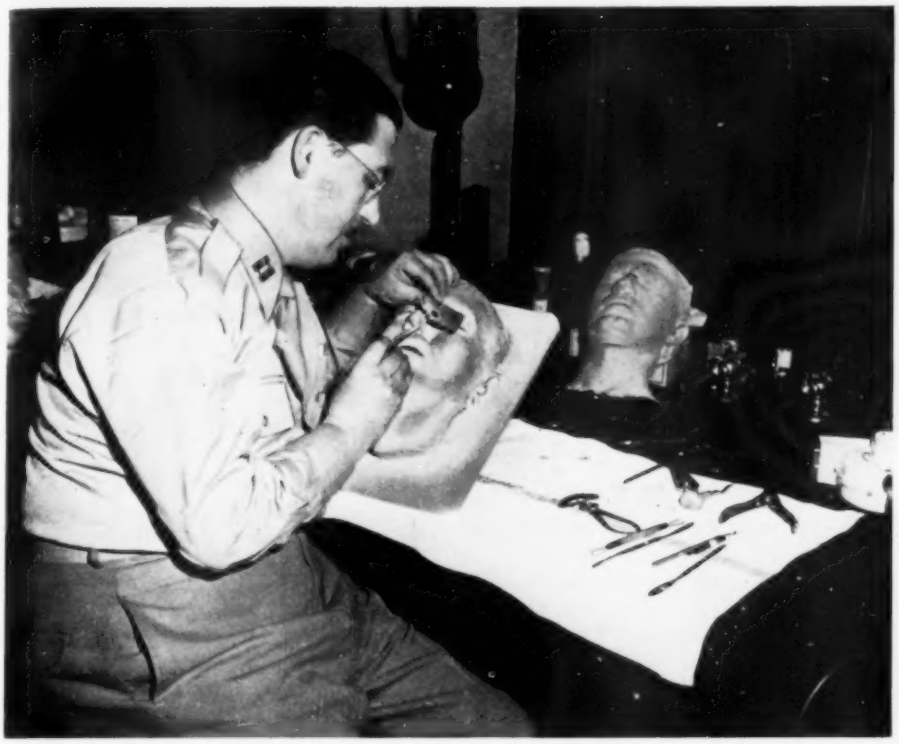
Latest thing in casts which Army maxillofacial surgeons are using for jaw injuries is an acrylic bandage. The first was supplied by the manufacturer in material about one inch wide which looked like three lengths of thin metal coil springs stuck side by side.

After being shaped to fit the patient's head, a liquid was poured over it which flattened and hardened it. The elastic bands for traction were then attached to this light plastic semi-cast.

Col. Roy F. Stout, chief of the dental service at Walter Reed, asked to have this acrylic material supplied in a woven mesh instead of the coils. The result is material that looks and feels exactly like strong, fine quality white silk. Actually it is the same acrylic material and hardens in place to form a strong, stiff bandage when the liquid is poured over it.

Much more plastic surgery will be done in this war than in the last, the surgeons at Walter Reed think. This is partly because of the improvements in

WOUNDED—This soldier is recovering full use of his arm and will soon be able to turn the big wheel completely around as a result of physical therapy at Walter Reed Hospital, part of the Army Medical Center.



FACES REMODELED—At the Army Medical Center, Capt. D. H. Cash uses his skill to prepare an artificial eye and half-nose for a soldier blinded by a "booby-trap."

methods and partly because burns, which are a potent cause of disfigurement and deformity, are much more frequent.

Infection, such as lockjaw and gas gangrene, are hardly a problem, thanks to the sulfa drugs and blood plasma. Men wounded in battle today have a better chance of escaping infection than victims of street accidents at home, it was stated.

All the officers at Army hospitals in the United States are constantly impressed with the excellent condition of the wounded when they arrive here.

Plasma and sulfa drugs are not the only modern medical weapons used in first treatment of the wounded at or near the front. Plastic surgery actually starts in the field and a dental maxillo facial kit, for face wounds involving skin, bones and teeth, is part of the equipment of dental and surgical officers serving with the troops.

The mobile X-ray unit, which packs into two trunks that can be carried by four men and set up ready for use anywhere within 30 minutes, is the best of its kind that any army has or has ever had. It has a fluoroscopic screen to enable the doctor to see within the patient's body immediately as well as equipment for taking X-ray pictures that can be swiftly developed in the same black tent.

This unit is used chiefly for diagnosis and location of bullets or shell fragments. It can also be used to treat skin diseases and calluses of the feet, a common affliction of soldiers. For treating conditions deeper within the body, such as cancer, a more powerful machine is needed.

Patients needing such care are brought back to the States, sometimes being flown home from as far as India or the Southwest Pacific in Army transports or bombers to get treatment started as fast as possible. One such patient is a lieutenant colonel who had a large cancer of the kidney that had spread to the neck. His case was considered hopeless, but he was treated and now is back on duty, as active and vigorous as ever.

Radium as well as X-rays are among the weapons with which Army medical officers protect the health of the nations' fighting forces. Newest military medical use of this weapon is to protect the Army airmen from deafness and impairment of their sense of equilibrium.

In some people, Major Milton Friedman, chief of the irradiation therapy section at Walter Reed explained, bits of adenoid tissue persist even when the main bulk of it has been removed with the tonsils in childhood. These persisting and often enlarging bits may press on the Eustachian tube between the ear and the back of the nose and troat. This condition may cause deafness and is apt to be particularly troublesome to flyers during the rapid descent from high altitudes in dive bombing.

To prevent the condition, a radium pack is put up the nose for two or three hours so that its rays may destroy the persistent adenoid tissue.

Vaccine Made

This bird's eye view of the Army Medical Center would not be complete without mention of the Army Veterinary Corps and its two missions. Looking after the Army's animals, and even this largely mechanized and motorized Army has quite a few, is one of its missions. This also affects human health since animals are often a reservoir of diseases that spread to humans.

Equine encephalomyelitis, one of the strange virus-caused maladies popularly called sleeping sickness, is an example. The disease affects both horses and man and it was an Army Veterinary Corps officer who discovered that it was spread by mosquitoes. A vaccine which protects horses from the plague is made by the Veterinary Corps at the Army Medical Center.

Second important mission of this little-understood branch of the Army Medical Department is to test all Army food of animal origin, from slaughterhouse through processing and storing to the time it is to be served to the soldiers.

The foods include fresh and all kinds of canned milk, sausages, bouillon cubes, pemmican for aviators' emergency rations—chili con carne—and canned ham and eggs.

This is the latest ready-to-heat-and-eat food product to pass both taste and other tests of the Veterinary Corps, which sampled some of the 800,000 dozen orders making up the first consignment. The tests on all foods are both for sanitary quality and for Army specifications for protein, fat and water content.

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● RADIO

Saturday, May 15, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. G. R. Wendt, of Wesleyan University, Middletown, Conn., and member of the Committee on Selection and Training of Aircraft Pilots of the National Research Council, will discuss "Airsickness."

ENGINEERING

Lignite May Get Wider Use; Nation Has Huge Deposits

➤ HUGE lignite deposits in the United States are a potential source of war power, Prof. C. J. Eckhardt, Jr. and C. W. Yates, University of Texas engineers, reported to the American Society of Mechanical Engineers meeting in Davenport, Iowa.

Only an insignificant fraction of the nation's 939 billion ton reserve is being utilized. But soaring fuel consumption to meet war needs brings increased attention to this low-rank fuel.

Lignite, often called "brown coal," is more widely used in Europe than America. It appears to be a halfway station between wood and coal, occurring at a more youthful age than its true coal relatives.

Lignite contains more water and ash than ordinary coal. But misconceptions are commonly held about the properties of lignite that stand in the way of its more extended use, the engineers reported, in presenting test data which dispel these notions.

"The failure to use appropriate grate surfaces has caused this fuel to be maligned with regard to sifting losses from size reduction of the fuel particles as heat is applied and moisture is driven off.

"Yet the water losses are no greater than those of some of the more admirable fuels and the size reduction while this fuel burns can be rendered inconsequential. The most serious misconceptions relate to its tendency to undergo size-reduction processes while in storage and while being handled."

More than a sixth of the nation's mineral-fuel reserve is lignite. Principal deposits are where no mountain-making movement of the earth's crust has occurred, mainly in Texas, Montana and the Dakotas.

Science News Letter, May 8, 1943

MEDICINE

Ice Anesthesia Important In Military Surgery

➤ IMPORTANCE of refrigeration anesthesia in the care of war wounds of arms and legs as well as in civilian surgical conditions is stressed in an editorial of the *Journal of the American Medical Association* (May 1).

Slowness on the part of doctors in adopting this new method is gently criticized in the editorial.

With this method a soldier's badly wounded arm or leg is packed in chipped ice and a tourniquet applied. Within about two hours the surgeon can proceed to operate without any further anesthetic being given. This avoids the necessity of giving a general anesthetic such as ether for treatment of a minor wound and avoids subjecting the severely wounded man to the added burden of a general anesthetic.

The new method has the added advantage of helping to prevent or treat shock which is likely to develop after wounds.

Because the refrigeration reduces the consumption of oxygen by the tissues, the tourniquet can be left on for many hours without danger of decay and death of the arm or leg. This avoids the suffering and blood loss from periodic loosening of an emergency tourniquet.

Science News Letter, May 8, 1943

INVENTION

Patent Applications From Enemy Published

➤ PATENT applications from enemy countries, as well as from lands at present in the hands of the enemy, are now being published by the Office of Alien Property Custodian for the benefit of American firms engaged in war work. Format of publication is essentially the same as that of regularly published patents, and copies may be obtained from the U. S. Patent Office at a cost of ten cents each.

Patents have not yet been granted on these applications. However, rights in the applications as they stand are now vested in the Alien Property Custodian, and it is his desire that they be made available to American producers for the furthering of the war effort.

Publication of annotated lists, by classes, has been begun in the Patent Office Gazette. Several hundred applications for chemical patents were listed in the Gazette for April 20, and a miscellaneous group, all the way from toys to firearms, in the issue for April 27. Since the total number of applications is approximately 3,000, it is anticipated that publication will be continued for about ten numbers of the *Patent Office Gazette*.

A few applications, of particular military significance, are being withheld from publication.

Science News Letter, May 8, 1943

IN SCIENCE

ORNITHOLOGY

Band-Tail Pigeon Stages Comeback in West

➤ ADD the band-tailed pigeon to the list of American wild species that have made a successful comeback through wise conservation measures.

The band-tail is about the size of the domestic pigeon. The characteristic slate-colored band across the tail gives it its name.

White men found them in the mountains in flocks that darkened the skies. The same sort of slaughter that drove the carrier into extinction threatened extinction for the band-tail.

Then, in most western states, the protection of a complete year-round closed season was thrown over the band-tail. In some five states, short open seasons have been established in recent years, because of the comeback that the birds have made.

In Colorado, they have come back too far for the peace of mind of ranchers and orchardists. Many complaints are made of raids by the revivified completely protected band-tails.

Science News Letter, May 8, 1943

AERONAUTICS

Conveyors Speed Output In Largest Propeller Plant

See Front Cover

➤ FOUR-BLADED plane propellers are conveyed to the final balance room at the nation's largest propeller plant just completed in Indiana, as shown on this week's SCIENCE NEWS LETTER cover. This Curtiss-Wright plant is considered to be the most completely conveyorized in the country. Production moves in as nearly a straight line as possible over miles of conveyors to achieve top efficiency of each man-hour expended in manufacture.

The plant itself is a huge windowless structure employing wooden trusses for support. From it will come many types of propellers for the United Nations flying forces.

Science News Letter, May 8, 1943

NE FIELDS

ENGINEERING

Steering Wheels Made From Redwood Waste

➤ AUTO steering wheels are among new plastic products made from redwood pulp described by Harry F. Lewis, dean of the Institute of Paper Chemistry, before the meeting of the American Society of Mechanical Engineers in Davenport, Iowa.

He told of extensive research at the Institute to reveal fundamental knowledge of the chemical composition of various parts of the redwood tree.

A tannin was found to be responsible for the longevity of the stately tree giants. This same tannin and related compounds in the wood can now be converted by a special cooking process to thermoplastic pulp.

Resins combined with the treated pulp yield a thermosetting composition that can be molded into bottle closures and similar plastic products.

A plant has been set up in California to make the pulp from redwood conveyor waste.

Science News Letter, May 8, 1943

NAVIGATION

Sailors Adrift Make Shadow Marker for Guide

➤ HOW men adrift at sea can determine their latitude by using a hunk of cardboard, a pin and piece of string, was announced by Dr. Bart J. Bok of the Harvard Astronomical Laboratory during an Adventures in Science broadcast.

After an extensive study of gadgets that might be used, Harvard Observatory navigation instructors have come to favor a simple shadow marker designed by Sanford Cluett of Troy, N. Y.

A pin is stuck in the center of a nine-inch graduated circle mounted on cardboard or plywood. This device is suspended and weighted down so that the 90 degree division on the circle marks the direction of a plumb line.

From the division on the circle marked by the pin shadow, the sun's altitude can then be derived.

"If we know the sun's altitude the latitude of the ship's position can be readily found with the aid of a table of declinations of the sun," Dr. Bok explained.

By this simple device the sailor can tell within only about 10 miles how far he is north or south of the equator.

Then by following an old trick of Columbus and the New England whaling captains, sailors can get onto the right parallel of latitude and sail toward their destination.

And if they have a watch set on Greenwich time they can figure longitude.

Science News Letter, May 8, 1943

MEDICINE

Old Antiseptic Finds New Favor in Wound Treatment

➤ A GROUP of World War I wound antiseptics are finding new favor with surgeons of World War II (*British Medical Journal,* March 20).

These antiseptics are yellow dyes called flavines. Acriflavine was the most popular of them but is now known to be the least satisfactory. This may explain in part why most doctors abandoned the antiseptics for 20 years between wars.

Proflavine is the best, according to the editor of the British Medical Journal. It is not only efficient in preventing wound infection but may prove superior to the sulfa drugs in preventing gas gangrene. Laboratory experiments point that way.

Important for success with the flavines is the method of using them. With wet dressings most of the dye sticks in the fabric of the dressing, while with emulsions the usual chemical constitution is such that almost none of the dye can escape from it into the wound.

In Libya during the present war Dr. G. A. G. Mitchell and Dr. G. A. H. Buttle found a simple solution to this problem. They put flavines into wounds in the form of a powder.

"The results obtained by this treatment," comments the medical editor, "even in cases of intractable suppuration were often dramatic."

The flavines have a relatively low toxicity, making them safe to use, and will destroy germs in a freshly infected wound before they have had a chance to grow out, Dr. C. H. Browning, of Glasgow, one of the earliest champions of the flavines, reports.

They have, he says, a "pickling" or "cold-storage" effect which makes it possible to transport wounded men without redressing their wounds.

Science News Letter, May 8, 1943

NUTRITION

New Process Makes Canned Peas "Greenies"

➤ A NEW canning process keeps peas in the cans so green they have been nicknamed "greenies" (*Nutrition Reviews,* May).

The process which keeps peas from taking on the familiar "olive drab" color of the usual canned peas was developed by J. S. Blair and T. B. Ayres who are connected with the American Can Company.

The reason canned peas lose the intense green color of peas picked from the vine is because during the ordinary shelling, canning and storing, they lose their chlorophyll. This green coloring matter loses magnesium and is gradually changed into pheophytin.

The new process, reported in detail in *Industrial and Engineering Chemistry,* involves, among other things, the addition of about one-tenth of a percent of magnesium hydroxide in the packing medium.

There is apparently no sacrifice of nourishing quality. When the alkalinity is properly controlled through each stage of the canning process there is no loss of either vitamin C or vitamin B_1 (thiamin). Flavor and texture of the peas is also said to be improved, or kept more nearly like that of fresh peas.

The Food and Drug Administration, according to the editor of *Nutrition Reviews,* requires that the labeling for this new product, which is at present more or less of a specialty item, must bear the statement "Traces of sodium carbonate, calcium hydroxide and magnesium hydroxide added," or they can carry the alternate statement "Traces of alkalies added."

Science News Letter, May 8, 1943

PSYCHIATRY

Peace Indoctrination Needed After Present War

➤ PEACE indoctrination to prevent catastrophic "social wobbling" is called for in the post-war planning ideas of Dr. C. Charles Burlingame, psychiatrist-in-chief at the Institute of Living, formerly called the Hartford Retreat.

"Recreating the urge to do civilian work at the end of the war will be a far greater task than creating jobs," he declared at the Institute's 119th annual meeting.

Science News Letter, May 8, 1943

BLAZING THE

HOW ELECTRONIC TELEVISION WAS CREATED BY RCA LABORATORIES . . . HISTORIC STEPS IN THE EVOLUTION OF THIS NEW SCIENCE

BACK IN 1929 a modest man with a quiet voice calmly announced two inventions . . . two amazing almost magic devices that made it possible for radio to "see" as well as to "hear."

This man was Dr. V. K. Zworykin of RCA Laboratories. And his research in electronics gave radio its electronic "eyes" known as the Iconoscope and the Kinescope. The former is the radio "eye" behind the camera lens; the latter is the receiver's screen.

Since that red-letter day in television history, ceaseless research in the science of radio and electron optics has established RCA Laboratories as the guiding light of television.

The decade of the thirties saw television's coming-of-age. It brought new scientific instruments and discoveries; it developed new techniques of showmanship; it even created new words—televise, telecast, teleview, and telegenic.

In the evolution of television there have been "high spots"; historic milestones of progress; definite "firsts" —made possible by the services of RCA.

1928—1932—FROM THE FIRST EXPERIMENTAL STATION TO ALL-ELECTRONIC TELEVISION

Station W2XBS, New York, was licensed to RCA in 1928 to conduct television experiments. Transmitter located at laboratory in Van Courtlandt Park, was later moved to Photophone Building, 411 Fifth Avenue; then to New Amsterdam Theatre until 1931, when operations were transferred to Empire State Building.

On Jan. 16, 1930, Television pictures were transmitted by RCA from W2XBS at 411 Fifth Avenue and shown on 6-foot screen at RKO-Proctor's 59th Street Theatre, New York.

Television station W2XBS, operated by National Broadcasting Company, atop New Amsterdam Theatre, New York, opened for tests July 7, 1930, with the images whirled into space by a mechanical scanner.

Empire State Building, the world's loftiest skyscraper, was selected by RCA as the transmitter and aerial site for ultra-short-wave television experiments using both mechanical and electrical scanners. Operation began October 30, 1931.

Field tests of 240-line, all-electronic television were made by RCA at Camden, N. J., with television signals relayed by radio from New York through Mt. Arney, N. J., for the first time, May 25, 1932.

1936—OUTDOOR TELEVISION

Television outdoors was demonstrated by RCA at Camden, N. J., on April 24, 1936, with local firemen participating in the program broadcast on the 6-meter wave.

All-electronic television field tests of RCA began June 29, 1936, from ultra-short-wave transmitter in Empire State Building and aerial on the pinnacle releasing 343-line pictures.

Radio manufacturers saw television demonstrated by RCA on July 7, 1936, with radio artists and films used to entertain.

1937—ELECTRON "GUN"

Electron projection "gun" of RCA was demonstrated on May 12, 1937, to Institute of Radio Engineers, with pictures projected on 8 x 10-foot screen.

Television on 3 x 4-foot screen was demonstrated by RCA to Society of Motion Picture Engineers on October 14, 1937; pictures were transmitted from Empire State Building to Radio City.

Mobile television vans operated by RCA-NBC appeared on the streets of New York for first time, December 12, 1937.

1938—BROADWAY PLAY TELEVISED

Scenes from a current Broadway play, "Susan and God," starring Gertrude Lawrence, were telecast on June 7, 1938, from NBC studios at Radio City.

RCA announced on October 20, 1938, that public television program service would be inaugurated and commercial receiving sets offered to the public in April, 1939.

1939—BASEBALL—KING GEORGE VI—FOOTBALL

Opening ceremonies of the New York World's Fair televised by NBC on April 30, 1939, included President Roosevelt as first Chief Executive to be seen by television.

"A first from the diamond." Columbia vs. Princeton, May 17, 1939, televised by NBC.

TELEVISION TRAIL

Improved television "eye" named the "Orthicon," introduced by RCA on June 8, 1939, added greater clarity and depth to the picture.

Television spectators in New York area on June 10, 1939, saw King George VI and Queen Elizabeth at the World's Fair, telecast by NBC.

Brooklyn Dodgers-Cincinnati game telecast by NBC on August 26, 1939, was the first major-league baseball game seen on the air.

First college football game—Fordham-Waynesburg—televised by NBC, September 30, 1939.

Television from NBC station in New York was picked up by RCA receiver in plane 20,000 feet over Washington, D. C., 200 miles away, October 17, 1939.

Television cameras of NBC scanned the scene in front of Capitol Theatre and in lobby at premiere of motion picture "Gone With The Wind," December 19, 1939.

1940—HOCKEY—COLOR—TRACK BIRD'S-EYE TELEVISION

Color television was demonstrated on February 6, 1940, to Federal Communications Commission by RCA at Camden, N. J.

First hockey game was televised by NBC camera in Madison Square Garden, February 25, 1940.

Basketball: Pittsburgh-Fordham, also NYU-Georgetown at Madison Square Garden were televised by NBC, February 28, 1940, as first basketball games seen on the air.

First Intercollegiate track meet at Madison Square Garden telecast on March 2, 1940.

Using RCA's new, compact and portable television transmitter, a panoramic view of New York was televised for the first time from an airplane on March 6, 1940. Television sightseers as far away as Schenectady saw the bird's-eye view of the metropolis.

Premiere of television opera on March 10, 1940, featured Metropolitan Opera stars in tabloid version of "Pagliacci."

First telecast of religious services on March 24, 1940, from NBC Radio City studios, were seen as far away as Lake Placid.

Ringling Brothers-Barnum and Bailey circus viewed on the air, April 25, 1940, through NBC electric camera in Madison Square Garden.

Television pictures on 4½ x 6-foot screen were demonstrated at RCA annual stockholders meeting May 7, 1940, at Radio City.

Republican National Convention was televised on June 24, 1940, through NBC's New York station via coaxial cable from Philadelphia.

Democratic National Convention films rushed by plane from Chicago for NBC were telecast in New York, July 15, 1940.

President Roosevelt was seen by television throughout the Metropolitan areas as he addressed Democratic rally, October 28, 1940, at Madison Square Garden.

Election returns on November 5, 1940, televised for first time by NBC, showed teletypes of press associations reporting the news.

1941—COMMERCIAL TELEVISION

Television progress demonstrated to FCC on January 24, 1941, included: home-television receiver with 13½ x 18-inch translucent screen; television pictures 15 x 20 feet on New Yorker Theatre screen; pictures relayed by radio from Camp Upton, Long Island, to New York; also facsimile multiplexed with frequency modulation sound broadcast.

Television pictures in color were first put on the air by NBC from Empire State Building Transmitter on February 20, 1941.

Large-screen television featuring Overlin-Soose prize fight on May 9, 1941, at Madison Square Garden was demonstrated by RCA at New Yorker Theatre; also, on following days, baseball games from Ebbets Field, Brooklyn.

Commercial operation of television began July 1, 1941, on a minimum schedule of 15 hours a week. NBC's station WNBT, New York, the first commercially licensed transmitter to go on the air, issued the first television rate card for advertisers, and instituted commercial service with four commercial sponsors.

Entry of the United States in World War II, enlisted NBC television in New York to aid in illustrating civilian defense in air-raid instructions in the New York area.

1943—AMERICA AT WAR!

Today RCA Laboratories, pioneer in the science of electronics, is devoting all its efforts to the war.

Yet, from the discoveries, developments and inventions made under the urgency of war, will come greater wonders for the Better Tomorrow of a peacetime world.

RADIO CORPORATION OF AMERICA

RCA BUILDING, NEW YORK

CREATOR OF ELECTRONIC TELEVISION

ASTRONOMY

New Red Shift Theory

New explanation given for reddening of distant stars. Our universe not necessarily expanding. Laboratory confirmation believed impossible.

➤ A NEW explanation of the "red shift" on which the theory of the expanding universe is based was offered by Prof. L. H. Thomas, Ohio State University physicist, in a paper given before the American Physical Society meeting in Columbus, Ohio.

The observed reddening of distant stars has usually been explained as due to the motion of these stars away from us, and showing that our universe is expanding. This is similar to the lowering of the pitch of a locomotive whistle as the engine steams away. The sound waves, sent out with the same frequency, but from an ever-increasing distance, strike the ear with diminishing frequency and the pitch of the whistle is consequently lowered. In the same manner the light of a receding star is lowered in frequency, which is denoted by a "shift" toward the red end of the rainbow or spectrum.

But the idea of the expanding universe has met much opposition of late from some astronomers because they felt it would make the universe much too young. It would not give time for the evolution of the stars, for the groupings and arrangements which have taken place. Up to the present time no other satisfactory explanation of the reddening of the distant stars has been found.

That the shift of the entire spectrum toward the red end is not due to absorption of gases or other matter scattered in space between us and the stars is revealed by the fact that during a gorgeous sunset when the blue of the sunlight is absorbed, the wavelengths of the remaining red and orange light of the sun are unchanged.

Prof. Thomas believes the red shift may be due to a secondary effect of ordinary refraction, the slowing down of light waves as they enter a refracting medium. The medium receives a velocity in the direction in which the light is traveling when the front of a wave train, finite in length, strikes it. If there are no elastic forces and no friction in the medium, this velocity is lost when the last of the wave train passes. Neither the medium nor the progress of the wave train is disturbed. But if there is friction, Prof. Thomas shows that there is a slowing down of the light so that the whole wave train is gradually reddened. He does not believe that this sort of reddening can ever be produced in the laboratory for experimental purposes.

Science News Letter, May 8, 1943

AERONAUTICS

Study Predicts Success Of Youthful Pilots

➤ A YOUTH'S success in learning to fly is determined largely by how ardently he wants to fly. Group Captain J. W. Tice, Director of Canada's Medical Services (Air), stated that the Royal Canadian Air Force, as a result of a recent medical survey, has wiped out many preconceptions used in air crew selection.

Group Captain Tice explained that the athlete was found to be at an advantage because of his better muscular control, but whether he was a successful golfer or goalie on the hockey team seemed immaterial.

The hay fever sufferer is not necessarily washed out now. The self-balancing test whereby the candidate was timed as he stood on one foot with eyes shut is no longer given.

They have found that the same percentage of university graduates and non-college students become successful pilots. Students who enlisted in air crew directly from school make better records than any class of working men; skilled craftsmen rate second.

Science News Letter, May 8, 1943

RADIO

Radar—The Secret Word

➤ THE REMOVAL of radar from military secrecy wraps leaves many other questions unanswered, although the American people can now guess how important this radio-spotting and distance-measuring device is to the war.

For several years the existence of such an effective radiolocator has been known. Radar, although the word was not used, was described in broad outline by military officials in Congressional hearings in 1940. British officials in June, 1941, revealed the existence of their secret device for detecting airplanes.

The Army-Navy announcement definitely credits American scientists, as yet unnamed, with the beginnings of radar when they observed in 1922 that reception from a radio station was interfered with by an object moving in the path of the signals. In 1925 it was found that an object would bounce back radio signals, and in 1930 research engineers were able to pick up reflected signals from planes passing overhead. In 1934 they had developed a satisfactory means of measuring the distance between the radar transmitter and the target.

The fundamental principle of the radar is that ultra high frequency (very short) radio waves can be focussed and are reflected when they strike an enemy ship or airplane. Since these radio waves, like light, travel at 186,000 miles per second, a measurement of the very short interval of time allows the determination of the distance of the object.

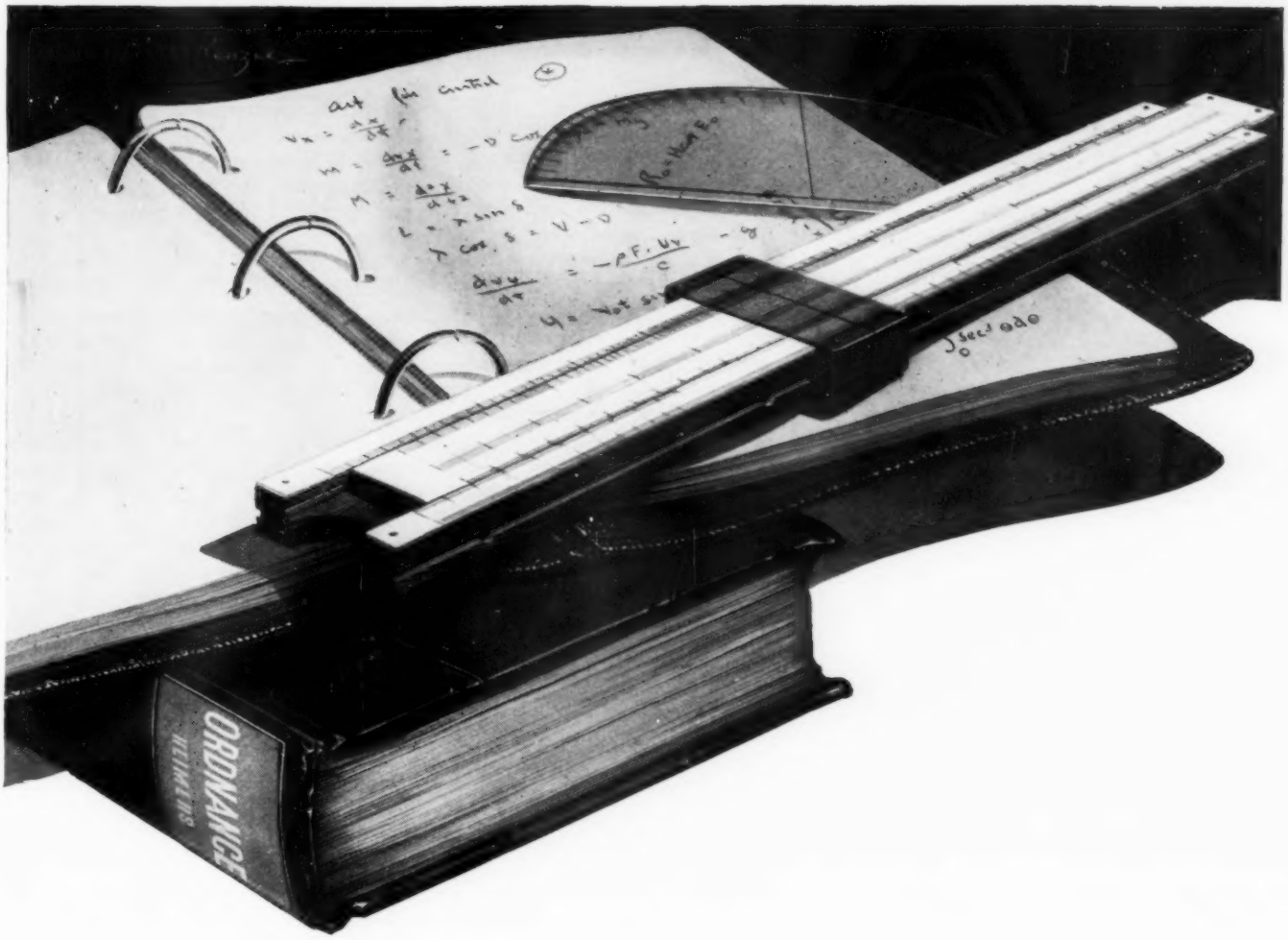
Radars "see" through the night, fog or storms, and they provide data, according to the official statement, for anti-aircraft guns and for the direction of airplanes and warships.

The British version of radar, which they call the radiolocator, is credited in the official release with saving England during aerial blitz of 1940 and 1941. Radar now stands guard "at many danger points along United Nations frontiers and at sea, warning of the coming of aerial and sea-borne enemy forces."

The British, in making their revelation of their form of radar nearly two years ago, named Sir Robert A. Watson-Watt as the scientist who contributed largely to its development. As yet the American scientists who pioneered in this essential war industry and possible post-war industry have not been cited to the public.

The group of American scientists who were the inventors of radar will without question be considered worthy of the highest honors that can be bestowed upon them because of the great usefulness of radar as a military device.

Science News Letter, May 8, 1943



What's a cotangent got to do with ack-ack?

PLENTY. So have sines, cosines, squares and square roots, differential equations, and integral calculus.

For the accurate firing of anti-aircraft batteries depends wholly upon the science of mathematical calculations that must be made fast—faster than a score of the most brilliant mathematicians could do it!

To solve these problems—to make the ack-ack of the United Nations deadlier—Westinghouse engineers are assisting in the development of an improved "electric brain" that makes the necessary lightning-like calculations.

The firing control—known as the "computing director"—not only *locates* the exact position of the target as it twists and dodges through the sky. It also *calculates* where the enemy plane will be by the time the shell has traveled 10,000 or more feet into the air—all in a matter of seconds.

And that's not all. The computing director makes instantaneous corrections for drift, air density, wind conditions, and gun muzzle velocity. In addition, it calculates the fuse setting on the shell—so that the burst will occur at the *calculated position* of the enemy plane.

Westinghouse is making hundreds of other weapons for victory such as: guns, shells, radio equipment, instruments, electric motors and generators, and propulsion equipment for our giant battleships and rapidly growing merchant marine. And delivering these war materials faster than ever!

We are proud of the way Westinghouse "know-how" is adding day-by-day to America's tremendous striking power—on land, at sea, and in the air.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pennsylvania.

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

PHYSICS

Cosmic Ray Theory

New proposal is that they are due to protons, not electrons, plunging into the earth's atmosphere from space, and that each proton is split into mesotrons.

➤ COSMIC rays are due to protons which plunge into the earth's atmosphere from outer space, and the proton splits into ten mesotrons. This is the latest theory which Dr. W. F. G. Swann, physicist of the Bartol Research Foundation of the Franklin Institute, proposes (*Physical Review*).

Dr. Swann has long contended, in company with many other distinguished physicists, that the incoming particles responsible for the rays are protons. Others have contended that they were high-speed electrons. He now adds a further detail to the theory, that the proton splits into ten mesotrons. This theory, he believes, is the only one that satisfactorily accounts for the variation of cosmic ray intensity with the latitude and altitude.

The proton is the positively charged particle found in the central sun or nucleus of an atom. It has about the weight of the hydrogen atom, the nucleus of which is composed of a single proton, around which revolves a single negatively charged electron. The electron has only 1/1800 the weight of a proton.

The mesotron is the elusive and exceedingly shortlived middleweight particle, with a weight about 1/10 that of the proton. Its life span is only one to two millionths of a second. Consequently many are found high up in the atmosphere, but much fewer lower down. Not many live to reach the earth's surface. During its brief flight, the mesotron parts with most of its energy and degenerates to an electron.

Science News Letter, May 8, 1943

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NUTRITION

Chemical Now Protects Bread Against Mold Growth

➤ SEVERAL billion loaves of bread for soldiers and civilians will be protected this year against mold by a chemical product called "Mycoban."

Specially prepared salts added to the dough stymies mold and "rope" growth during hot, humid weather.

Use of the chemical cannot be detected by a change in the taste, texture or appearance of the bread.

This product, manufactured by chemical means, also occurs naturally in foods such as vinegar and milk-derived products like Swiss cheese. Only two or three ounces need be added to the dough of a hundred loaves of bread to delay the development of mold for several days.

The new product may also be used advantageously in making cakes and pies. In the case of butter, the inhibitor is incorporated into the parchment wrapping and a quantity may be kept on hand to protect the surface of the butter where the mold usually appears.

Science News Letter, May 8, 1943

PUBLIC HEALTH

Women Fatigue Easily During First Work Days

➤ WOMEN industrial workers tire out easily when first placed on machines unless they are old factory hands, declared Dr. B. I. Beverly, director of health and personnel of the Republic Drill and Tool Company of Chicago, speaking at the meeting of the American Society of Mechanical Engineers in Davenport, Iowa.

Dead tired and discouraged, they are likely to quit their jobs. Keep them at the machines only four hours a day at first and give supplementary training the other four hours, is the antidote Dr. Beverly recommends.

For eliminating fatigue such things as foot rests and comfortable chairs are necessary, he stated. "We are working on these problems and have a long way to go before we will be satisfied that physical fatigue has been reduced to a minimum."

Mental fatigue is also a factor in production. Music during part of the day has been found helpful. "Women industrial workers require relief from the monotony of their work," he said. "To that end, we have provided recreation centers."

"Another important difference between men and women is their attitude toward their work. To men, their work is an end in itself. It is their life occupation . . . With women, however, their job is a means to an end. They do not expect to work in industry all their lives. Their ambition in life is to have a home . . . Very few of them, therefore, wish to learn another job."

Science News Letter, May 8, 1943

MEDICINE

Parents Less Liable To Death from Cancer

➤ PARENTS are less liable to death from cancer than other people. Harold Dorn states (*Human Biology*) that for both males and females, those who marry and have children are less likely to die from cancer than those who remain single, but those who marry and have no children have the highest death rate from cancer.

While the difference in the death rate for men was not so marked, the mortality indices for married, widowed or divorced, and single women for England and Wales were 100, 117, and 105.

Statistics compiled from records in England, Wales and Australia show that childbearing decreases the likelihood of development of breast cancer, but increases the chances of cancer of the genital organs for woman.

Science News Letter, May 8, 1943

A loaf of *bread,* frozen when fresh, tastes equally good after 3 weeks in the refrigerator.

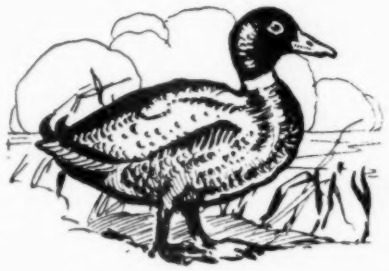
The *muskrat,* widely advertised recently for food, is not a rat; it is more closely related to the beaver.

By a new process *liver* may now be reduced to a fine brown powder which will keep indefinitely without refrigeration and occupies about a fifth of its original space.

ORNITHOLOGY

NATURE RAMBLINGS

by Frank Thone



Talking About Ducks

➤ EVERYBODY knows ducks. Everybody likes ducks. Many of us even know the differences between several kinds of ducks, whether we have followed them with a hunter's gun or a bird student's field-glasses and camera. After you've had them pointed out a few times, it isn't difficult to distinguish between a mallard and a teal, a pintail and an old-squaw.

But there are still a lot of duck facts that all of us can learn, with interest and probably with profit. A good place to find such duck data in complete but compact form is a new book by an outstanding Canadian field naturalist, Francis H. Kortright: *The Ducks, Geese and Swans of North America* (American Wildlife Institute, $4.50).

Do you know, for example, how to tell whether the particular duck you have in hand is an adult or a juvenile bird? Here are three different criteria presented by Mr. Kortright: (1) If even one of the tail-feathers is square-ended or notched, your bird is a juvenile. If all tail-feathers are normally rounded off at the ends, it is likely to be an adult—though it still may be a juvenile that has just completed its tail molt. Shall we say, an adolescent duck? (2) Juvenile ducks usually have fine, narrow stripes, comb-fashion, at the very tips of their beaks; adults seldom have them. (3) Adults of species with bright feet usually have higher foot coloration than juveniles, at least in autumn. None of these three methods of differentiation is dependable by itself, but taken together they aid in making a determination.

Again: If during nesting season you should happen upon a flock of what look like female ducks sociably paddling around, don't jump to the conclusion that here is a web-footed "hen party" neglecting their home duties. Most likely it's a lot of males in what is known as the eclipse molt. After the breeding period, says Mr. Kortright, drakes shed the conspicuous, festive plumage they wore during their courtship and their brief wedded life, and for a season go about in darker, soberer feathers, similar to the plumage of the females. Like grass-widowers who have decided to settle down to a spell of single independence, they are wearing old clothes and hanging around with the gang at the club.

These and many other things of equal interest reward a dip into the first few pages of Mr. Kortright's book. The body of the text, of course, is devoted to description of the ducks and their relatives, species by species, with full accounts, in plain English, of their distribution and habits. And in addition to the many text illustrations there are 36 full color plates by T. M. Shortt.

Science News Letter, May 8, 1943

"Dear Mom . . . I never felt better in my life"

ISN'T it wonderful to get a letter like that from your boy wherever he is . . . Iceland, Ireland, Australia, or a camp in the U. S. A.

Remember how you used to worry about his health when he was a little fellow . . . how secure you felt in the house on Greene Street because it was just around the corner from Doc Brown's?

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TEC-W-1944

• New Machines and Gadgets •

❁ *THRIFTY LIDS are available for thrifty housewives who have coffee-type jars, and wish to use them in preserving fruit and vegetables. The thrifty lids are tin metal tops which are placed on the filled jar and held tightly in place with the metal screw cap which came with the jar. After cooling the screw cap is removed, the lid remaining in place held by the vacuum in the jar.*

Science News Letter, May 8, 1943

❁ *ELECTIC RAZORS may be sharpened by a device just patented. A felt pad is saturated with a mixture of oil and abrasive. The cutting end of the shaver is pressed against the pad, causing a little of the oil to exude. Power is turned on and the revolving cutting edges are sharpened.*

Science News Letter, May 8, 1943

❁ *AN ALL-PURPOSE gas mask which protects against carbon monoxide and smoke, as well as all other gases, has been developed. The design permits full vision, both sideways and downward. The canister is designed for two hours of actual service. An automatic timer shows how long it has been used. It is recommended by the manufacturer for fire-fighting particularly, filtering out 95% of any smoke, fumes, mist or fine dust.*

Science News Letter, May 8, 1943

❁ *OXIDE-COATED filaments in radio tubes emit electrons more readily than plain metal ones because the oxygen dissolves in the filaments, like salt dissolves in water, and loosens up the crystalline structure of the metal, recent experiments seem to show. A scientist is shown dissolving oxygen in a strip of metal. Such work opens up the possibility of developing better X-ray, radio and power tubes.*

Science News Letter, May 8, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 155.*

• Just Off the Press •

AIRCRAFT PRODUCTION: PLANNING & CONTROL—H. D. MacKinnon, Jr.—*Pitman*, 253 p., illus., $3.75. "All the essential information for the improvement of coordination between the Shop and Production department."

THE AIRPLANE AND TOMORROW'S WORLD—Waldemar Kaempffert—*Public Affairs Comm.*, 31 p., 10c. Paper pamphlet no 78. Post-war thinking.

THE AMERICAN SPECIES OF SCUTELLARIS—Carl Epling—*Univ. of Calif. Press*, 136 p., 3 plates, $1.75. University of California publications in botany, vol. 20, no. 1.

AMERICAN WOMEN OF SCIENCE—Edna Yost—*Stokes* (*Lippincott*), 232 p., $2. Young people.

ARMY SELECTEE'S HANDBOOK: FOR THOSE MEN WHO WILL BE CALLED FOR DUTY UNDER THE SELECTIVE TRAINING AND SERVICE ACT—John R. Craf—*Stanford Univ. Press*, 79 p., 75c. Written by a First Lieutenant in the Quartermaster Corps for the 18-year olds, many of whom are going away from home for the first time.

BASIC ELECTRICITY—Wilbur L. Beauchamp and John C. Mayfield—*Scott, Foresman and Co.*, 312 p., illus., $1.60. Prepared at the request of the War Department and the U. S. Office of Education in comformance with official pre-induction training outline no. PIT 101.

BETTER PHOTOGRAPHY MADE EASY—*Agfa Ansco*, 60 p., illus., 25c. Beautifully illustrated booklet for the snapshooter and photographer.

CLINICAL SIGNIFICANCE OF THE BLOOD IN TUBERCULOSIS—Gulli Lindh Muller—*Commonwealth Fund*, 516 p., $3.50.

THE COTTON INDUSTRY—Josephine Perry—*Longmans, Green*, 128 p., illus., $1.75. One of the America at Work series for young people.

DEVELOPING AND PRINTING MADE EASY—*Agfa Ansco*, 60 p., illus., 25c. Introducing the snapshooter to the more thrilling experiences possible in the dark room. Nice illustrations.

THE DUCKS, GEESE AND SWANS OF NORTH AMERICA: A *vade mecum* for the naturalist and the sportsman—Francis H. Kortright—*American Wildlife Institute*, 475 p., illus., $4.50.

ESTADISTICA: Journal of the Inter-American Statistical Institute, 60c per copy, $2 per year. Subscriptions may be sent to Halbert L. Dunn, Secretary General Inter-American Statistical Institute, Census Bureau, Wash., D. C. New periodical, published in Mexico, on statistics.

EXPLORING THE WARTIME MORALE OF HIGH-SCHOOL YOUTH—Lee J. Cronbach—*Stanford Univ. Press*, 79 p., 75c. Applied Psychology Monographs, no. 1.

FACTORS AFFECTING STUDENT ACHIEVEMENT AND CHANGE IN A PHYSICAL SCIENCE SURVEY COURSE—Waldo Lyle Brewer—*Teachers College, Columbia Univ.*, 78 p., $1.60. Teachers College, Columbia University Contributions to Education, no. 868. The authors suggest research which "might result in better curriculum content for survey courses."

FUNDAMENTALS OF SOIL SCIENCE—C. E. Millar and L. M. Turk—*Wiley*, 462 p., $4.75. College textbook and reference book for farmers.

GARDENING FOR GOOD EATING—Helen Morgenthau Fox—*Macmillan*, 262 p., $2.50.

INTER-AMERICAN STATISTICAL YEARBOOK, 1942—Raul C. Migone, director — *Macmillan*, 1066 p., $10.

INTRODUCING INSECTS: A Book for Beginners—James G. Needham—*Jaques Cattell*, 129 p., $1.75.

AN INTRODUCTION TO GROUP THERAPY—S. R. Slavson—*Commonwealth Fund*, 352 p., $2. Technical book for psychiatrists and for workers in child guidance clinics.

MARRIAGE BEFORE AND AFTER—Paul Popenoe—*Wilfred Funk*, 246 p., $2.

MIND, MEDICINE, AND MAN—Gregory Zilboorg—*Harcourt, Brace*, 344 p., $3.50.

MINERALS AND ROCKS: Their Nature, Occurrence, and Uses—Russell D. George—*Appleton-Century*, 595 p., illus., $6. One of the Century Earth Science Series.

PICTURE MAP GEOGRAPHY OF MEXICO, CENTRAL AMERICA AND THE WEST INDIES—Vernon Quinn—*Lippincott*, 114 p., illus., $2. Juvenile.

A REVIEW OF THE GENUS MONARDA (LABIATAE)—Elizabeth McClintock and Carl Epling—*Univ. of Calif. Press*, 47 p., illus., 75c. University of California publications in botany, vol. 20, no. 2.

SOCIAL HYGIENE YEAR BOOK, 1942: The Program in Action in the States and Communities—Jean B. Pinney, ed—*American Social Hygiene Ass'n.*, 251 p., charts., $1.

A STUDY OF PYCMANTHEMUM (LABIATAE)—Elizabeth Grant and Carl Epling—*Univ. of Calif. Press*, 45 p., maps, 75c. University of California publications in botany, vol. 20, no. 3.

THESE MYSTERIOUS RAYS: A Nontechnical Discussion of the Uses of X-Rays and Radium, Chiefly in Medicine—Alan L. Hart—*Harper*, 218 p., $2.75.